

App. No. 10/065,992  
Amendment dated November 1, 2004  
Reply to Office action of July 30, 2004

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the present application.

**Listing of Claims:**

**Claim 1 (original): A surface-coated machining tool, comprising:**  
a cemented-carbide base material containing tungsten carbide and cobalt, with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less; and  
coated over said cemented-carbide base material, a compound thin film made up of a combination of one or more elements selected from the group titanium, chromium, vanadium, silicon and aluminum, and one or more elements selected from carbon and nitrogen; wherein  
said compound thin film is coated in at least a single layer.

**Claim 2 (original): The surface-coated machining tool set forth in claim 1, wherein said compound thin film is 0.05  $\mu\text{m}$  or more and 3  $\mu\text{m}$  or less in thickness.**

**Claim 3 (original): The surface-coated machining tool set forth in claim 1, wherein a compressive residual stress of 0.1 GPa or more and 8 GPa or less is imparted to said compound thin film.**

**Claim 4 (original): The surface-coated machining tool set forth in claim 1, wherein said compound thin film is in surface roughness adjusted to be 0.01  $\mu\text{m}$  or more and 0.5  $\mu\text{m}$  or less by indication Ra.**

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**Claim 5 (original): A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide and  
cobalt, with the cobalt inclusion amount being 4 weight % or more and 12  
weight % or less; and**

**a hard carbon thin film made up essentially of carbon atoms only,  
coated over said cemented-carbide base material by a physical vapor  
deposition method in which graphite is made a raw material; wherein  
said hard carbon thin film is coated in at least a single layer.**

**Claim 6 (original): The surface-coated machining tool set forth in claim 5,  
wherein said hard carbon thin film is 0.05  $\mu\text{m}$  or more, and 3  $\mu\text{m}$  or less in  
thickness.**

**Claim 7 (original): The surface-coated machining tool set forth in claim 5,  
wherein a compressive residual stress of 0.1 GPa or more and 8 GPa or less is  
imparted to said hard carbon thin film.**

**Claim 8 (currently amended): The surface-coated machining tool set  
forth in ~~claim 8~~ claim 5, wherein said hard carbon thin film is in surface  
roughness adjusted to be 0.01  $\mu\text{m}$  or more and 0.5  $\mu\text{m}$  or less by indication Ra.**

**Claim 9 (original): The surface-coated machining tool set forth in claim 1,  
wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$   
or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.**

**Claim 10 (original): The surface-coated machining tool set forth in claim  
2, wherein the tungsten carbide in said cemented-carbide base material is 0.1  
 $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.**

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**Claim 11 (original):** The surface-coated machining tool set forth in claim 3, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 12 (original):** The surface-coated machining tool set forth in claim 4, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 13 (original):** The surface-coated machining tool set forth in claim 5, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 14 (original):** The surface-coated machining tool set forth in claim 6, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 15 (original):** The surface-coated machining tool set forth in claim 7, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 16 (original):** The surface-coated machining tool set forth in claim 8, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 17 (new):** A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide and cobalt, with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less; and

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coated over said cemented-carbide base material, by a physical vapor deposition method, a compound thin film made up of a combination of one or more elements selected from the group titanium, chromium, vanadium, silicon and aluminum, and one or more elements selected from carbon and nitrogen; wherein

said compound thin film is coated in at least a single layer; and  
a compressive residual stress of 0.1 GPa or more and 8 GPa or less is imparted to said compound thin film.

**Claim 18 (new): A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide and cobalt, with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less; and**

coated over said cemented-carbide base material, by a physical vapor deposition method, a compound thin film 0.05  $\mu\text{m}$  or more and 3  $\mu\text{m}$  or less in thickness, made up of a combination of one or more elements selected from the group titanium, chromium, vanadium, silicon and aluminum, and one or more elements selected from carbon and nitrogen; wherein

said compound thin film is coated in at least a single layer; and  
a compressive residual stress of 0.1 GPa or more and 8 GPa or less is imparted to said compound thin film.

**Claim 19 (new): A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size, and cobalt, with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less; and**

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**a hard carbon thin film made up essentially of carbon atoms only, coated over said cemented-carbide base material by a physical vapor deposition method in which graphite is made a raw material; wherein said hard carbon thin film is coated in at least a single layer.**

**Claim 20 (new): A surface-coated machining tool, comprising:**

**a cemented-carbide base material containing tungsten carbide 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size, and cobalt, with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less; and**

**a hard carbon thin film made up essentially of carbon atoms only, coated over said cemented-carbide base material by a physical vapor deposition method in which graphite is made a raw material; wherein said hard carbon thin film is coated in at least a single layer; and**

**a compressive residual stress of 0.1 GPa or more and 8 GPa or less is imparted to said hard carbon thin film.**